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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,174	02/06/2004	Paul Richard Granfors	141906XZ (15244US01)	7187

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EXAMINER

BITAR, NANCY

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/774,174

Applicant(s)

GRANFORS ET AL.

Examiner

Nancy Bitar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 23 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 02/06/04.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-22, drawn to "method for detecting scintillator hysteresis artifacts in an image", classified in class 382, subclass 128.
 - II. Claims 22-23, drawn to a method for detecting differences in x-ray image signal levels, classified in class 702, subclass 85.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed. The subcombination has separate utility such as measuring the electric charge in both areas and notifying an operator of an x-ray system when said difference is greater than a threshold.
3. During a telephone conversation with Mr. George Christopher on 03/06/07 a provisional election was made to prosecute the invention of detecting scintillator hysteresis artifacts in an image from an x-ray detector, claims 1-22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 23-24 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn

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to a non-elected invention. Applicant's election of claims 1-22 is acknowledged.

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

4. The examiner has required restriction between combination and subcombination inventions. Where applicant elects a subcombination, and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Mazess et al (US 6,438,201).

As to claim 1, Mazess et al. teaches a method for detecting scintillator hysteresis artifacts in an image from an x-ray detector, said method including: examining an image from an x-ray detector to measure a first signal level for a first area of interest and a second signal level for a second area of interest (column 20, lines 1-33, note that once the scan is complete, the signals provided by the detector 13 are reconstructed in image on the computer), wherein said first area of interest includes a first image area (bone area values of process 80) and said second area includes a second image area (bone area values of process block 82); determining a difference in said first signal level and said second signal level (column 28, lines 32-56) note that the detector 13 is sampled and digitized so as to produce a signal consisting of DAS which transmit the digital signal to the computer 18 as an image); and comparing said difference to a threshold (figure 12 and 14, the threshold for the distinction between the bone and soft tissues is determined by means of a graph and note that computer 18 compares the flux index to the minimum and maximum flux threshold, column 34, lines 45-59).

As to claim 2, Mazess et al. teaches the method of claim 1, further including exposing said x-ray detector with a flat field x-ray exposure to produce said image (figure 21, column 27, lines 27, lines 60-67).

As to claim 3, Mazess et al. teaches the method of claim 1, wherein said first image area differs from said second image area (data elements attributes to bone and data elements attribute to soft tissues, column 21, lines 12-19).

As to claim 4, Mazess et al. teaches the method of claim 1, wherein said detector includes a plurality of pixels, said plurality of pixels comprising a first set of pixels and a second set of pixels, wherein said first set of pixels are examined to measure a first set of pixel signals and said second set of pixels are examined to measure a second set of pixel signals, wherein said first signal level includes said first set of pixel image signals and said second signal level includes said second set of pixel image signals (figure 19, anterior-posterior scan of a spine showing regions of pixels measuring bone and a graph aligned with the scan having a vertical axis corresponding to vertical location in the scan and a horizontal axis corresponding to the sum of pixel values for a row of scan data permitting the identification of the vertebra by minimas or rows of low total bone value, column 26, lines 66).

As to claim 5, Mazess et al. teaches the method of claim 4, wherein said first set of pixels includes a first plurality of photodiodes, said first plurality of photodiodes measuring said first set of pixel signals and said second set of pixels includes a second plurality of photodiodes, said second plurality of photodiodes measuring said second set of pixel signals (note that the detector or detector array may use a combination scintillator, photodiode or other photosensor, as described, or may be constructed of a

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material that convert x-rays directly to an electric signal as is understood in the art ,
column 31, lines 4-14)

As to claim 6, Mazess et al. teaches the method of claim 5, wherein said first set of pixel signals is measured by determining an amount of electrical charge discharged in said first plurality of photodiodes and said second set of pixel signals is determined by measuring an amount of electrical charge discharged in said second plurality of photodiodes (FIG. 22, the low energy detector 37(a) includes a photodiode 304 coated on its surface facing oncoming x-rays 310 with a scintillation material 308. x-rays 310 passing through the scintillation material 308 produce light which may be detected by the photodiode 304. The photodiode 304 provides an electrical signal in response to the light, which may be processed to produce an intensity signal as is understood in the art. Optionally, in between the scintillation material 308 and the diode 304 a layer of lead impregnated glass (not shown) may be placed to block radiation 310 not absorbed by the scintillation material 308 yet to pass light from the scintillator 312, column 28, lines 5-24).

As to claim 7, Mazess et al. teaches the method of claim 4, wherein said threshold is a percentage of an average of a plurality of standard deviations (figure 20) of said first set of pixel image signals and said second set of pixel image signals (column 26 lines 54-67 and column 28 lines 1-5).

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As to claims 8 -10, Mazess et al. teaches the method of claim 1, further including: automatically irradiating said detector (fan beam 23) with an x-ray flux when said difference is greater than said threshold, wherein said x-ray flux is equivalent or greater to said flat field x-ray exposure (measuring x-ray flux, column 32, lines 57-67, figures 17,31,32, note that the densitometry system may adjust x-ray flux according to the flux index and body region by first adjusting x-ray current, and then, if the flux level remains unacceptable after adjusting the x-ray current to its limits, adjusting the speed of a multi-speed actuation system).

Claims 12-22 differ from claims 1-11 only in that claims 1-11 are method claims whereas, claims 12-22 are an apparatus claim. Thus, claims 12-22 are analyzed as previously discussed with respect to claims 1-11 above.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Li et al (6,996,262) is cited to teach a method to determine calcification score of the pixels corresponding to the coronary artery with respect to the threshold.

Odogba et al (US 6,404,853) is cited to teach digital x-ray detector that experience an amount of residual charge that cause image artifacts.

Inquiries

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nancy Bitar whose telephone number is 571-270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on 571-272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

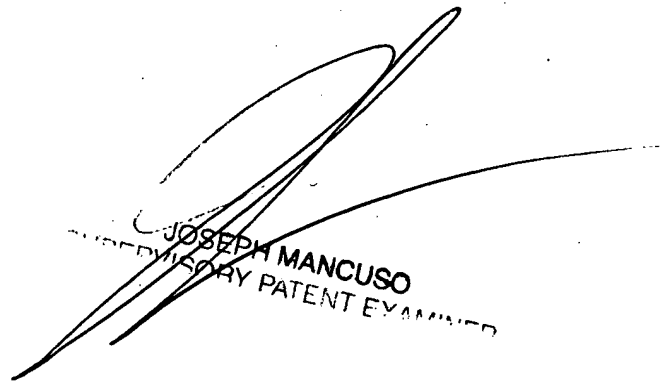
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SUPERVISORY PATENT EXAMINER